UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/715,077	11/17/2003	Chandra C. Varanasi	STL11371	3298

7590 09/14/2005	**EXAMINER**
Seagate Technology LLC	WAMSLEY, PATRICK G
1280 Disc Drive	

ART UNIT	PAPER NUMBER
2819	

DATE MAILED: 09/14/2005

Seagate Technology LLC
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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 August 2005*.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

    4a) Of the above claim(s) *17 and 18* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 November 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☒ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. *09/09/2005* .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's arguments filed on 08/15/2005 have been fully considered but they

are not persuasive.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 6, 8-11, 13-14, and 16 are rejected under 35 U.S.C. 102(b) as being

anticipated by U.S. Patent 6,366,223 to Lee, hereafter Lee.

For claim 1, Lee provides an encoding method comprising the steps of receiving

a sequence of data words [source data] and encoding the data words into code words

[blocks] by adding a binary symbol [nibble inversion indication, hereafter NII, bit] and

selectively complementing the data word [according to the rules listed in column 6].

Claim 9 restates these method limitations in apparatus format.

For claims 6, 13, and 14, Lee selectively complements a binary symbol "with" a

data word because the NII bit, corresponding to the recited binary symbol, serves as a

marker, showing whether a particular nibble has been inverted or not.

For claims 2 and 10, Lee's running digital sum, hereafter RDS, calculator [320]

tracks the RDS for the sequence of code words [blocks].   After the bit manipulator

[330] generates a codeword or a complemented codeword, the resulting blocks fit into

the output sequence, corresponding to the recited "concatenating" step.

For claims 3 and 11, Lee selectively complements codewords to limit the RDS

value of the sequence of codewords [col. 7, lines 18-19].

For claims 8 and 16, Lee parses a sequence of input data and transforms [by

codebook tables: cols. 7-15] 9-bit source data [n bits] into a sequence of ten-bit code

words, keeping the RDS value below the required threshold [n+1].

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

> This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 4, 5, 7, 12, and 15 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Lee in view of U.S. Patent 6,731,228 to Suh et al, hereafter Suh.

Unlike claims 4, 7, 12, 15, Lee does not describe the use of unchanged data

words.   In contrast, Suh uses a calculator [66] to determine both RDS and sequence-

end digital sum, hereafter SEDS, values.   The calculator [66] counts how many times

the RDS sign changes [col. 5, lines 32-39].   Thus, data words are unchanged except

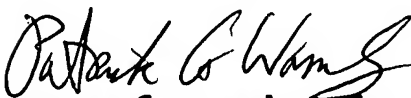when the RDS overflow flag is triggered.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to have applied Suh's RDS overflow teachings to Lee's DC control procedure. The motivation would have been to suppress DC components more efficiently, as suggested by Suh [col. 7, lines 64-65].

For claim 5, Suh uses a "1" to mark a transition while a "0" signals the absence of a transition [col. 7, lines 55-61].

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent 6,903,667 to Noda et al selects the value of an "inversion bit" to perform DC control in a code [col. 3, lines 39-49]. U.S. Patent 6,778,105 to Suh et al calculates RDS and SEDS values [col. 5, lines 33-45] to suppress DC signal components. U.S. Patent 6,604,219 to Lee et al discloses DC control of a multilevel signal by means of a merge symbol [col. 6, lines 50-64]. U.S. Patent 6,356,215 to Coene carries out DC control by changing the sign of the RDS contribution behind the merging bits [col. 8, lines 13-23]. U.S. Patent 6,343,101 to Dong et al selectively inverts samples for DC suppression [col. 14, lines 41-57]. U.S. Patent 5,742,243 to Moriyama reduces DC components in RLL codes. U.S. Patent 5,151,699 to Moriyama inserts DC control bits.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick G. Wamsley whose telephone number is (571) 272-1814. The official facsimile number is (571) 273-8300. An alternate facsimile number, (571) 273-1814, should only be used for unofficial documents.

Patrick G. Wamsley
September 13, 2005